UDC 551.576.1(265.5+965)(084.1)

PICTURE OF THE MONTH

"Rope" Cloud

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On Feb. 16, 1969, the meteorologists at the Weather Bureau Forecast Office on Wake Island observed an unusual and interesting "rope" cloud formation in the APT satellite data. This ESSA 7 satellite photograph of the area (fig. 1) taken about 5 hr later shows a long rope of clouds reaching from the Sea of Okhotsk (A) across Paramushi Island into the Pacific (B). The accompanying surface analysis for February 16 appears in figure 2.

A large Low that developed during the past 24 hr was centered at 180° and dominated the circulation in the central and western Pacific. The rope cloud feature first appeared on February 16 in the western portion of this cyclonic circulation. At the surface, strong northwesterly winds were advecting cold air from the snow-covered land and the pack ice offshore (ice edge at C) southward over the relatively warmer water. The numerous narrow

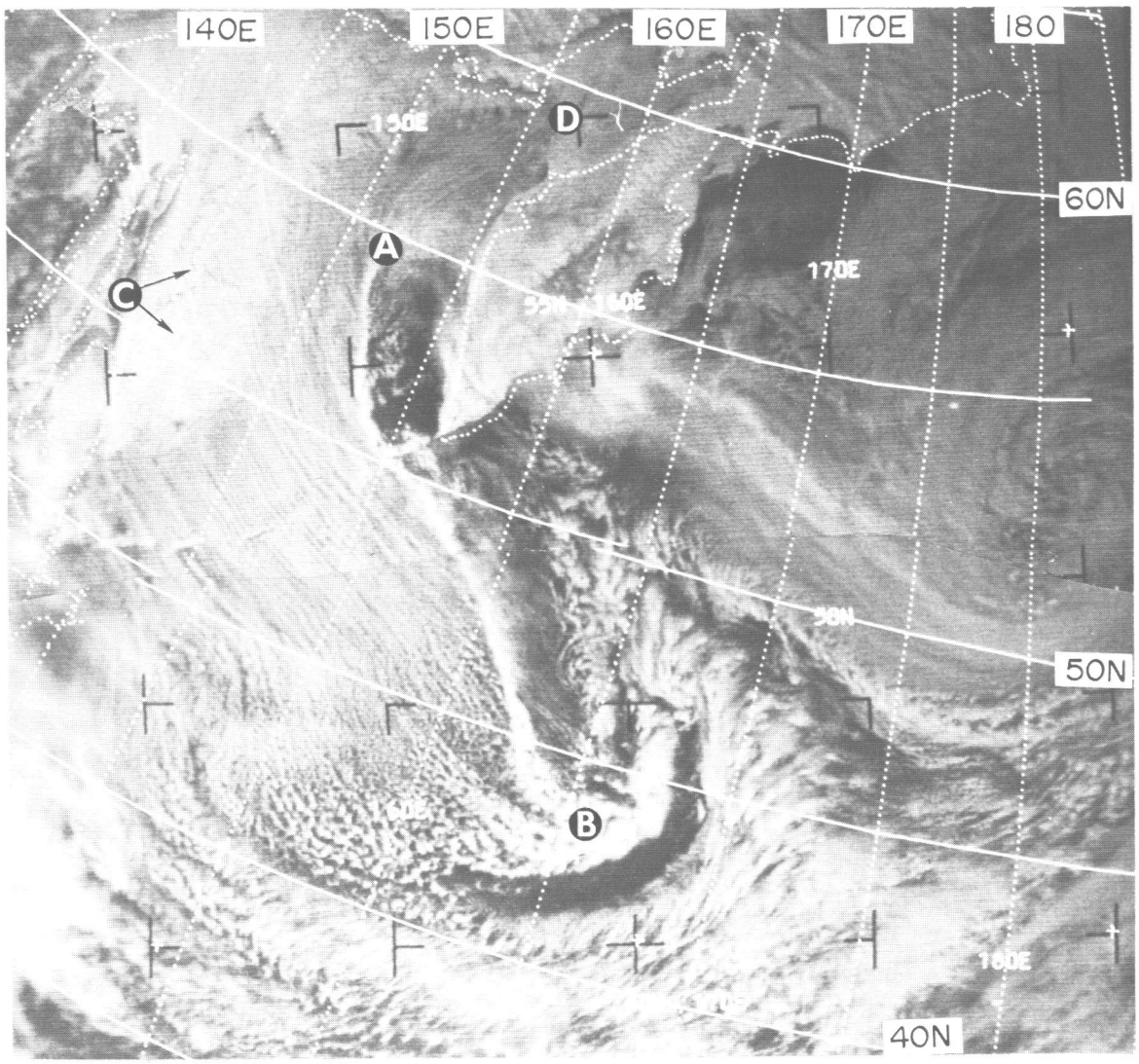

FIGURE 1.—View from ESSA 7, Pass 2299, at 0301 GMT on Feb. 16, 1969.

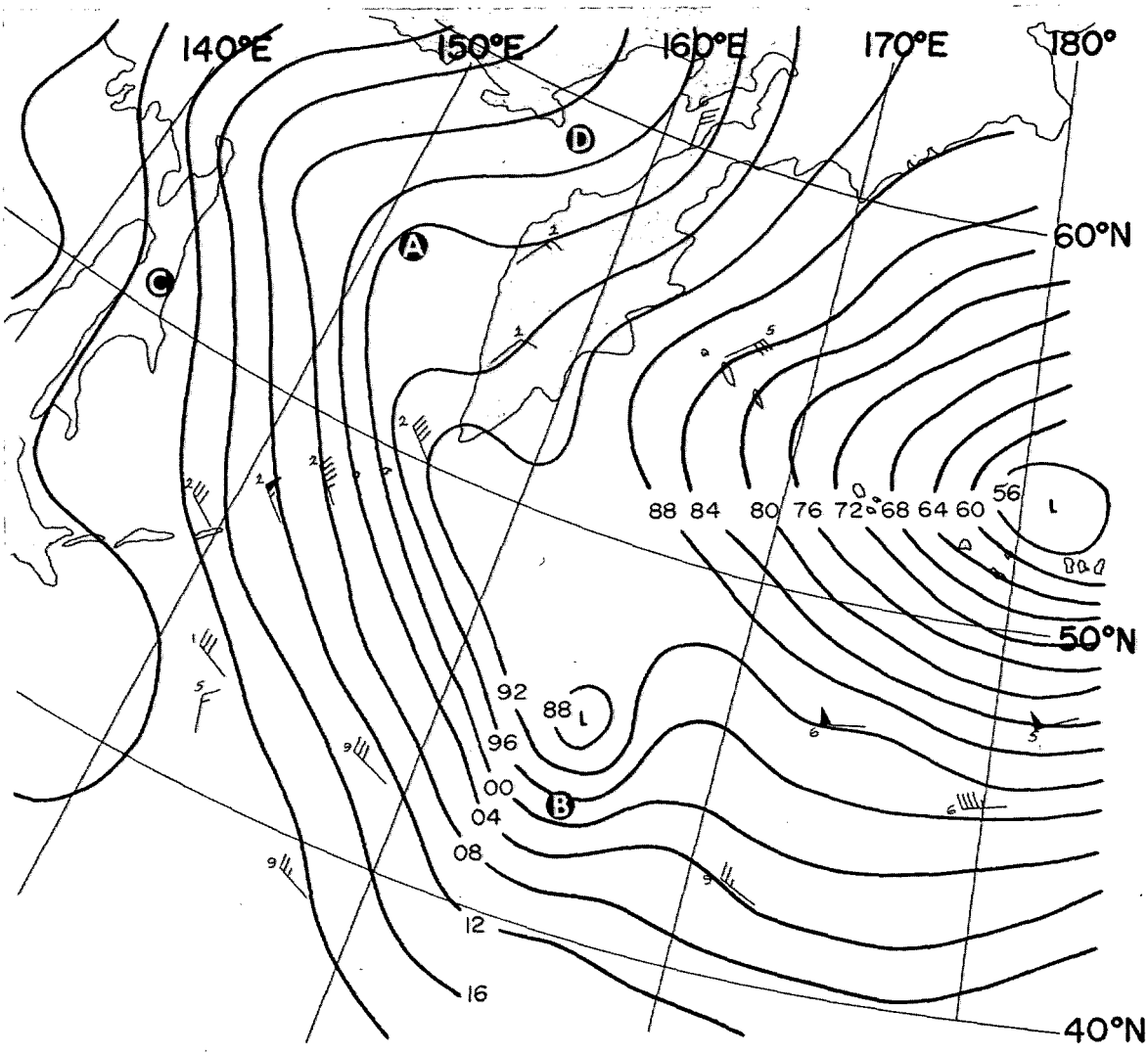

FIGURE 2.—Surface analysis for 0000 GMT on Feb. 17, 1969.

cumulus cloud lines typical of this situation are restricted to the southern side of the rope cloud.

These cloud lines are alined parallel to the surface flow in that area. Wind reports from the Kuril Islands suggest that the surface winds northeast of the rope are much lighter than those southwest of it. Thus, strong surface horizontal shear and cyclonic vorticity appear to play a role in producing this formation. The winds along the western edge of Kamchatka and the adjoining land area at D are light and northeasterly. Here, the small cloud lines converge, forming the beginning of this cloud formation. Thus, both shear and confluence appear to be responsible for this type of formation.

Rope clouds appeared in this area for 2 subsequent days. Similar cloud formations are often seen in the Davis Strait south and southwest of Greenland and in the Atlantic south of Iceland during the winter season. Since this cloud pattern is observed downwind from a land mass, it is probable that land areas that act as barriers to low-level flow are a factor in rope cloud formations.